

Claims

1. A method of manufacturing a high surface energy molded article with a mold having an inner surface, the method comprising:

applying a chlorinated polyolefin to the inner surface of the mold;

introducing a thermoplastic resin on the chlorinated polyolefin in the mold, the thermoplastic resin having a predetermined heat energy, to transfer at least a portion of the heat energy of the thermoplastic resin to the chlorinated polyolefin;

defining a molded article having a surface; and

maintaining contact of the thermoplastic resin and the chlorinated polyolefin for a predetermined time period to diffuse the chlorinated polyolefin through at least a portion of the surface of the molded article to increase the surface energy of the portion of the molded article for enhanced adhesion.

2. The method for manufacturing a high surface energy molded article in claim 1, wherein the step of applying the chlorinated polyolefin to the inner surface of the mold includes spraying a plurality of chlorinated polyolefin particles to the inner surface of the mold.

3. The method for manufacturing a high surface energy molded article in claim 2, further comprising the steps of:

applying an electrical charge to the plurality of particles of the substance; and electrically grounding the injection molding apparatus.

4. The method for manufacturing a high surface energy molded article in claim 3, wherein the chlorinated polyolefin is a powder.

5. The method for manufacturing a high surface energy molded article in claim 2, wherein the chlorinated polyolefin is a chlorinated polyolefin solution.

6. The method of manufacturing a high surface energy molded article in claim 1, further comprising the step of applying an electrically conductive substance to the inner surface of the mold.

7. The method of manufacturing a high surface energy molded article in claim 6, wherein the electrically conductive substance is selected from the group consisting of carbon, graphite, silver, nickel, and copper.

8. A method of manufacturing a molded article with a mold having an inner surface, the method comprising:

applying a substance to the inner surface of the mold;

introducing a thermoplastic resin on the substance in the mold, the thermoplastic resin having a predetermined heat energy, to transfer at least a portion of the heat energy of the thermoplastic resin to the substance;

defining a molded article having a surface; and

maintaining contact of the thermoplastic resin and the substance for a predetermined time period to diffuse the substance through at least a portion of the surface of the molded article.

9. The method of manufacturing a molded article in claim 8, wherein the substance includes chlorinated polyolefin for increasing the surface energy of the portion of the molded article for enhanced adhesion.

10. The method for manufacturing a molded article in claim 9, wherein the chlorinated polyolefin includes a chlorinated polyolefin powder.

11. The method for manufacturing a molded article in claim 9, wherein the chlorinated polyolefin includes a chlorinated polyolefin solution.

12. The method of manufacturing a molded article in claim 8, wherein the substance includes an electrically conductive substance for increasing the conductivity of the portion of the molded article.

13. The method of manufacturing a molded article in claim 10, wherein the electrically conductive substance is selected from the group consisting of carbon, graphite, silver, nickel, and copper.

14. The method for manufacturing a molded article in claim 8, wherein the substance includes a plurality of particles, the method further comprising the steps of:

applying an electrical charge to the plurality of particles of the substance; and electrically grounding the mold.

15. The method of manufacturing a molded article in claim 8, further comprising the steps of allowing the thermoplastic resin to harden into the molded article and removing the molded article from the mold, wherein the portion of the molded article has a surface energy of at least 38 dynes per centimeter after the step of removing the molded article from the mold.

16. A method for manufacturing a high surface energy molded article with a mold having an inner surface, the method comprising:

spraying a plurality of particles of a substance onto the inner surface of the mold; and

inserting a thermoplastic resin into the mold such that the substance is bonded to an outer surface of the thermoplastic resin.

17. The method for manufacturing a high surface energy molded article in claim 16, wherein the mold includes an injection molding apparatus, and the step of inserting a thermoplastic resin into the mold includes injecting molding the thermoplastic resin into the mold.

18. The method of manufacturing a high surface energy molded article in claim 17, wherein the substance includes chlorinated polyolefin and an electrically conductive substance.

19. The method of manufacturing a high surface energy molded article in claim 18, wherein the electrically conductive substance is selected from the group consisting of carbon, graphite, silver, nickel, and copper.